5.0
ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

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5.1 Introduction

This section describes the potential environmental consequences of each of the alternatives. The analyses of environmental consequences is conducted at a "program" level rather than an individual "project" level; that is, the analysis focuses on the general environmental effects of the administrative option represented by the alternatives rather than the on-the-ground effects of a specific RRM plan, subsection 1.3, Programmatic EA Review. This section describes the effects of implementing each alternative for the environmental elements described in Section 4.0, Affected Environment. Table 16 summarizes the potential environmental consequences of the alternatives. The three alternatives are described below within the regulatory mandates of the ESA. This description provides a framework for analyzing the environmental consequences of the alternatives.

Table 16. Summary of potential environmental impacts associated with each Limit 10 alternative.

Resource	Alternative 1	Alternative 2	Alternative 3
	No Action.	*Proposed Action. Take prohibitions with limits.*	*Take prohibitions with no limits.*
LAND USE	Lands within the analysis area would continue to be managed for current and proposed land use consistent with current land use policies.	Same as No Action.	Same as No Action.
GEOLOGY AND PHYSIOGRAPHY	Soil structure and physical elements would not be impacted by routine road maintenance. Culvert replacements may cause hydrologic alterations, but best management practices and technology may be implemented where required by existing laws.	Best management practices or measures that meet properly functioning conditions would be required for routine road maintenance plan approvals, which could minimize soil structure impacts, where current laws aimed at soil erosion do not exist.	Same as No Action.
SOILS	Routine road maintenance would continue with existing practices for erosion control. Minor impacts could occur at the reach scale from shoulder blading and winter sanding. Soils may enter streams at riparian areas adjacent to roads, unless minimized by current laws requiring best management practices. No impacts would occur at the watershed scale.	Routine road maintenance plans would be required to include best management practices to meet or exceed those established by ODOT, or to meet properly functioning conditions. Soil impacts at the reach scale would be minimized as a result of these requirements. No impacts would occur at the watershed scale.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.
CLIMATE	Climate, climate patterns, and climatological processes would continue unchanged by routine road maintenance activities.	Same as No Action.	Same as No Action.

Resource	Alternative 1	Alternative 2	Alternative 3
	No Action.	*Proposed Action. Take prohibitions with limits.*	*Take prohibitions with no limits.*
AIR QUALITY	Minor dust and particulate matter could be generated by routine road maintenance activities, but would not have a substantial impact at the watershed scale.	Same as No Action.	Same as No Action.
WATER QUANTITY	Water quantity would remain unchanged by routine road maintenance activities conducted under existing laws because new roads would not be developed.	Routine road maintenance plans would be required to include best management practices to meet or exceed those established by ODOT, or to meet properly functioning conditions. These would include culvert and ditch cleaning measures. Hydrology and hydraulics of a drainage system could be impacted by routine road maintenance measures, if they mimic pre-development results.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.
WATER QUALITY	Routine road maintenance would continue with existing practices; if any, for erosion control and other water quality measures. Urban areas with populations of 100,000 or more would continue to implement best management practices consistent with the Clean Water Act. Rural areas may or may not implement water quality regulations.	Routine road maintenance plans would be required to include best management practices to meet or exceed those established by ODOT, or to meet properly functioning conditions. These would include measures aimed at water quality protection. Beneficial effects would be more evident in rural areas where measures are not currently implemented than in urban areas with populations of 100,000 or more.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.

Resource	Alternative 1	Alternative 2	Alternative 3
	No Action.	*Proposed Action. Take prohibitions with limits.*	*Take prohibitions with no limits.*
FISH AND WILDLIFE/ESUs	Decline of the 14 ESUs would likely continue. Any adverse effects from routine road maintenance on listed ESUs would continue unless there are section 7 modifications, section 10 habitat conservation plans, or laws aimed at fish and wildlife protection or conservation affecting an ESU.	Routine road maintenance plans would be developed to meet Limit 10 criteria, and would contain provisions and measured designed to protect and conserve the 14 ESUs.	Same as Proposed Action if new plans are implemented but less opportunity for specified criteria aimed at ESU protection to be incorporated. Same as No Action if routine road maintenance follows existing practices.
FISH (Not including the 14 ESUs)	Routine road maintenance activities would likely continue unchanged. Most activities would not be under the purview of section 7 consultations, therefore, continued negative effects are anticipated. Other laws, policies, and plans aimed at fish protection could have a beneficial affect, however.	Routine road maintenance plans would be required to include best management practices to meet or exceed those established by ODOT, or to meet properly functioning conditions. The measures, along with other state and local measures, would incrementally benefit fish.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.
THREATENED AND ENDANGERED FISH SPECIES	Routine road maintenance activities would likely continue unchanged. Most activities would not be under the purview of section 7 consultations, therefore, continued negative effects are anticipated in these situations. Gradual improvements would likely occur where section 7 applies, other laws, policies, and plans aimed at fish protection could have a beneficial effect also.	Improved habitat conditions would occur under the Proposed Action. Programs currently implemented to protect the 14 ESUs would continue to provide benefit, which when combined with routine road maintenance programs under the Proposed Action, would provide greater benefits to special status cold-water species than conditions under the No Action Alternative.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.

Resource	Alternative 1	Alternative 2	Alternative 3
	No Action.	*Proposed Action. Take prohibitions with limits.*	*Take prohibitions with no limits.*
BIRDS, LAND MAMMALS, AND HERPETOFAUNA	No additional adverse effects at the watershed scale than currently exist since maintenance practices would remain unchanged. Minimum levels of habitat protection would likely result in adverse habitat impacts at the reach scale. State and local laws aimed at habitat and water quality protection could have a beneficial effect on these species, however.	No adverse effects and some beneficial effects compared to the No Action Alternative. Habitat improvements at the reach scale may be realized for some herpetofauna, small mammals, and neo-tropical birds resulting from best management practices and properly functioning condition measures required for approved plans.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.
THREATENED AND ENDANGERED WILDLIFE SPECIES	Ongoing maintenance can adversely affect species associated with vegetated edge habitats due to disturbances. IF state and local regulations exist to minimize disturbance and/or to protect listed species, these impacts could be minor.	No adverse effects and some beneficial effects compared to the No Action Alternative. Habitat improvements at the reach scale may be realized for some herpetofauna and neo-tropical birds resulting from best management practices and properly functioning condition measures required for approved plans.	Same as Proposed Action if new plans are implemented. Same as No Action if routine road maintenance follows existing practices.
VEGETATION	Minor vegetation impacts could occur by routine maintenance activities, but would not have a substantial impact at the watershed scale.	Same as No Action.	Same as No Action.
ECONOMY	Routine road maintenance would have no effect on state or regionwide economics.	Same as No Action.	Same as No Action.
TOURISM AND RECREATION	Routine road maintenance would have no effect on tourism or recreation.	Same as No Action.	Same as No Action.
CULTURAL RESOURCES	Routine road maintenance would have no effect on cultural resources because minor or no ground disturbance would occur.	Same as No Action.	Same as No Action.

Resource	Alternative 1	Alternative 2	Alternative 3
	No Action.	*Proposed Action. Take prohibitions with limits.*	*Take prohibitions with no limits.*
FEDERAL TREATY AND TRUST RESPONSIBILITIES	Routine road maintenance would have no effect on treaty and trust responsibilities.	Same as No Action.	Same as No Action.
ENVIRONMENTAL JUSTICE	Routine road maintenance activities would not affect environmental justice policies.	Same as No Action.	Same as No Action.

Alternative 1 - No Action

Under the No Action Alternative the 14 salmonid ESUs would be listed as threatened but there would be no take prohibitions because the 4(d) rule would not be implemented. Consequently, NMFS would not put in place the process for reviewing and approving proposed RRM plans described under the Proposed Action. Federal agencies, and those entities that accept Federal funds or apply for a Federal permit, would continue to consult with NMFS before taking any action that might affect the14 salmonid ESUs as section 7 of the ESA requires. Non-Federal entities may also be required to consult with NMFS under section 7 if they are seeking a Federal permit or spending Federal funds. Thus any action requiring a section 7 consultation would be modifiable so that it would not jeopardize listed species. Without this "Federal nexus," however, state and private actions could proceed without fully considering the effects of their activities on the listed ESUs. These actions can encompass the broad range of human activities occurring in the analysis area. Alternatively, voluntary implementation of state-wide best management practices and protective actions on the parts of state and local entities may eliminate or reduce the effects of actions that could harm the 14 salmonid ESUs (Section 3.0, Alternatives Including the Proposed Action).

Alternative 2 - Take Prohibitions with Limits (Proposed Action)

Under the Proposed Action, the ESA section 9 take prohibitions would be in effect. In addition to possibly having to consult under section 7, non-Federal entities would also have to consider potential liabilities under section 9 of the ESA for take of listed species, even when such take is incidental to otherwise lawful activity. This means that large property owners such as timber companies, state agencies such as the Washington Department of Fish and Wildlife, and local governments such as the City of Sacramento or the Port of Tacoma would not only need to consider whether they have to consult with NMFS under section 7, but whether they may be liable under the section 9 of the ESA if their activities were to directly or incidentally take any of the 14 threatened species.

The intent of the Proposed Action is to encourage state and local cooperation to protect listed ESUs and to develop long range conservation plans and options in addition to section 10 permit options. The Proposed Action provides an alternative regulatory mechanism to the ESA section 10 permit process available under Alternative 3, and it may result in more RRM program activities meeting 4(d) rule salmonid conservation criteria. Additionally, the Proposed Action would allow NMFS to focus its enforcement efforts on activities and programs that have not yet adequately addressed conservation needs of the ESU.

Under the Proposed Action, NMFS would limit the application of the take prohibitions for certain land and water management activities that it has determined would conserve listed salmonid habitat although activities may incidentally take individual listed fish. The Proposed Action alternative offers entities the opportunity to pursue RRM activities while avoiding possible liability under the ESA and provides NMFS with an additional management tool for

conserving listed species. The 4(d) rule identifies three different criteria to evaluate and approve RRM programs under Limit 10 (Section 3.4, Alternative 2 - Proposed Action). Entities may choose from the first two criteria, identified as 10(i) in the 4(d) rule, which requires an RRM program to meet or exceed the protections provided by the ODOT Guide, or the third criteria, 10(ii), which requires an RRM program to meet properly functioning habitat conditions. All three criteria require that NMFS-approved RRM programs are consistent with the conservation of listed salmonids' habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat conditions (65 FR 42422).

Alternative 3 - Take Prohibitions with No Limits

Similar to the Proposed Action, the section 9 take prohibitions would also be in effect under Alternative 3. Federal agencies, and those entities that accept Federal funds or apply for a Federal permit, would continue to consult with NMFS before taking any action that might affect the14 salmonid ESUs under section 7, or require an incidental take permit under section 10 (which also requires consultation). The environmental benefits between the Proposed Action and Alternative 3 may be minor. Alternative 3 can require modification of actions and change project designs to avoid jeopardizing listed fish. Its goal is to reduce the impacts of a wide range of actions to help conserve the 14 threatened ESUs.

The following environmental consequences are analyzed at the watershed scale and (where possible) at the reach scale. Activities under different alternatives may have reach scale impacts that do not, however, affect resources at the broader watershed scale. It is important to acknowledge the localized effects, but the larger scale watershed level impacts are the primary focus this Environmental Assessment. This is because NMFS is analyzing the effects of the Proposed Action, not a specific RRM plan. An RRM plan would have sufficient detail to describe any reach scale or watershed scale impacts.

5.2 Environmental Consequences

5.2.1 Land Use – All Alternatives

Activities under Alternatives 1, 2, or 3 would have no adverse or beneficial effects on land use, land management activities, or land ownership patterns in the analysis area. No activities under the alternatives would alter land use at any scale. Growth or decline in an economy is typically the propulsive force for land use changes. The probable economic consequences of the Proposed Action and its alternatives are minor and too small to affect land use (subsection 4.12, Economy). Current trends in land use, including the development of road ways and land conversions from forestry and agricultural uses to urban uses, would continue under all alternatives.

5.2.2 Geology and Physiography – All Alternatives

Activities under Alternatives 1, 2, or 3 would have no adverse or beneficial effects on geology and physiography in the analysis area because activities under the alternatives would not alter geology or geological processes described in subsection 4.3, Affected Environment, Geology and Physiography. Additionally, no alternatives under consideration would alter soil structure or physical elements (e.g., hydrology, mass wasting) that would lead to soil structure changes because no routine road maintenance plan, or activities conducted under them, would impact basin conditions within the analysis area described in subsection 4.3, Affected Environment, Geology and Physiography. Activities, such as culvert replacements, may lead to hydrologic alterations at the reach level, but best management practices would be required under the Proposed Action and possibly under the No Action Alternative and Alternative 3 where required by local law.

5.2.3 Soils

5.2.3.1 Alternative 1 – No Action

This alternative would have no adverse effects on soils at the watershed scale. With no ESA section 9 take prohibitions in effect, it is assumed that routine road maintenance would continue with existing practices for erosion control (subsection 1.2, Purpose of Routine Road Maintenance Activities). Consequently, at the reach scale, implementation of this alternative could result in continued movement of soils resulting from a variety of maintenance practices such as road shoulder blading and winter sanding. When roads are adjacent to streams or riparian areas, soils may move into streams at the reach scale unless current laws require best management practices to reduce this effect. Soil movement would contribute to declining water quality and in-stream habitat quality for macroinvertebrates and fish. At the watershed scale, RRM programs, however, would continue to comply with the Clean Water Act and various state and local regulations that require implementation of erosion control measures aimed at water quality protection.

5.2.3.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Similar to the No Action Alternative, the Proposed Action would have no adverse effect on soils at the watershed scale. At the reach scale, the movement of soils into waterways may be minimized if erosion control activities are proposed that would minimize the movement of soils across the landscape and into streams and wetlands.

<u>ODOT Transportation-Equivalent or Better RRM Plans (10)(i)</u>

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be

required to meet or exceed the best management practices established by ODOT, which include specific erosion control measures (subsection 3.4, Alternative 2 - Proposed Action). This alternative also includes best management practices for activities such as road shoulder blading, winter sanding, gravel road dust abatement, and mechanical vegetation management which are required to minimize the movement of soils from the road right-of-way to streams and wetlands. These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide. Plans including these activities could have a beneficial effect on soils at the reach scale as compared to the No Action alternative where activities may be conducted without implementing best management practices or other erosion control measures required by Federal, state, county, or local laws or regulations.

RRM Plans Meeting Properly Functioning Condition (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition could include best management practices that enhance and protect salmonid habitat and thereby minimize the movement of soils across the landscape and into streams and wetlands. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

5.2.3.3 Alternative 3 – Take Prohibitions with No Limits

This alternative would have no adverse effect on soils. With the take prohibition in effect, the potential for take can be reduced by implementing programs similar to those under Alternative 2; the effects to soils would be similar as well. However, the effects to soils would be similar to the No Action alternative where no additional erosion control measures were implemented beyond current practices.

5.2.4 Climate – All Alternatives

Activities under Alternatives 1, 2, and 3 would have no adverse or beneficial effects on climate in the analysis area. Activities under any alternative would not likely change climate, climate patterns, or climatological processes because no routine road maintenance plans, or activities conducted under them, would impact climate (subsection 4.5, Affected Environment, Climate).

5.2.5 Air Quality – All Alternatives

Activities under Alternatives 1, 2, and 3 would have no adverse or beneficial effects on air quality in the analysis area. Activities under the alternatives would not impact air quality because routine road maintenance plans, or activities conducted under them, would not add particulate matter or dust to the air such that it would be a substantial source at a watershed scale (subsection 4.6, Affected Environment, Air Quality).

5.2.6 Water Quantity

5.2.6.1 Alternative 1 – No Action

Roadways contribute to the adverse impact human activities have on water quantity (subsection 4.7, Water Quantity). However, the adverse hydrologic effects associated with roads are attributable to the physical presence of roads in the landscape, rather than to RRM practices.

This alternative would have no adverse or beneficial effect on water quantity at the watershed or reach scale because it would not involve any change in existing practices. Agencies responsible for routine road maintenance would continue their activities in accordance with their current standards of practice and required regulations. Current adverse effects of routine road maintenance on water quantity, if they exist, would likely continue unchanged under Alternative 1 unless there are other section 7 modifications affecting the ESU, or new laws aimed at practices affecting water quality.

5.2.6.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Unlike conditions under the No Action Alternative, some agencies responsible for road maintenance could alter their practices to gain approval under Limit 10 to be more protective of threatened salmonid ESUs under the Proposed Action. However, as under Alternative 1, any changes in routine road maintenance practices would only result in very minor effects on water quantity. The volume and peak flow of runoff from an unmaintained road is essentially the same as the volume and peak runoff from a maintained road. Thus, there would be no change in peak flow or volume of storm water runoff under the Proposed Action.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include specific culvert cleaning measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide.

Culvert and ditch cleaning practices could change under the Proposed Action compared to the No Action Alternative, and such changes could have a minor effect on the hydrology and hydraulics of the drainage system in the immediate vicinity of the road. In general, culvert placement has a detrimental effect on hydrologic systems. Changed culvert and ditch cleaning practices could have minor adverse or beneficial effects on water quantity. Any action that causes the hydrology of a road drainage system to more closely mimic the pre-development condition is beneficial, and any action that causes the hydrology to deviate even more from the pre-development condition would be adverse. For example, more frequent cleaning of road culverts to improve fish passage could minimize impoundment of water upstream of a culvert and make stream flow patterns more closely resemble pre-development conditions in rural areas, which would be a beneficial change. The reverse would be true in urban areas. Hydrology in urban areas is already impaired with higher peak flows because of the short pathway between any point in the watershed and the stream. Any activity that would reduce the storage of water would further exacerbate that impairment.

RRM Plans Meeting Properly Functioning Condition (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition could include best management practices that enhance and protect salmonid habitat and thereby minimize the hydrologic impacts associated with RRM activities. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

In summary, the effects of the Proposed Action Alternative on water quantity would be the same or very similar to those under the No Action Alternative, except that unlike Alternative 1, the Proposed Action Alternative could have very minor adverse or beneficial effects on water quantity in the immediate vicinity of a road depending on the local land uses and soil characteristics.

5.2.6.3 Alternative 3 – Take Prohibitions with No Limits

The effects of activities under Alternative 3 could be similar to those under the Proposed Action because, with the take prohibitions in effect, reducing the potential for take could occur by implementing plans, or activities conducted under them, similar to those under the Proposed Action; the effects on water quantity would be similar as well. Thus, activities under Alternative 3 could have very minor adverse or beneficial effects on water quantity in the immediate vicinity of a road. However, the effects on water quantity could be similar to the No Action Alternative where there would be no adverse or beneficial effects on water quantity if no additional water

quantity control measures were implemented beyond current practices.

5.2.7 Water Quality

5.2.7.1 Alternative 1 – No Action

This alternative would have no adverse or beneficial effect on water quality at the watershed or reach scales because it would not involve any change in existing practices. Agencies responsible for routine road maintenance would continue their activities in accordance with their current standards of practice and required regulations. In urban areas with a population of 100,000 or more, agencies responsible for road maintenance are currently implementing best management practices designed to lessen the adverse effects of road maintenance on water quality in accordance with Clean Water Act requirements (subsection 4.8.2, Roadways and Water Quality). In California, the California Department of Transportation is implementing best management practices designed to lessen the adverse effects of road maintenance on water quality on all major highways whether they are in urban or rural areas (subsection 4.8.2, Roadways and Water Quality). Other agencies may also be taking measures to reduce the adverse effects of road maintenance activities in rural areas although not required to do so by law. Stormwater is the major routine pathway for pollutant delivery from roads to streams. The runoff of pollutants from road maintenance activities that is occurring today would likely continue under Alternative 1. Thus any adverse effects of road maintenance activities on water quality, if they exist, would likely continue unless involving other section 7 modifications affecting the ESU, or laws aimed at practices affecting water quality.

5.2.7.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Unlike the No Action Alternative, under the Proposed Action, take prohibitions would be in effect, and agencies responsible for routine road maintenance could develop routine road maintenance plans for submittal to NMFS under the Proposed Action. In contrast to Alternative 1, the Proposed Action would likely have a beneficial effect on water quality because it would encourage agencies responsible for road maintenance to implement practices that are more protective of water quality than current practices in order to gain approval under Limit 10.

<u>ODOT Transportation-Equivalent or Better RRM Plans (10)(i)</u>

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include maintaining roadsides, stormwater systems, and road shoulders, mechanical vegetation management, and accident clean up measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide.

The beneficial effects of the Proposed Action would be more evident in rural areas than in large urban areas. As described in subsection 4.8.2, Roadways and Water Quality, agencies responsible for road maintenance in urban areas with a population of 100,000 or more are currently implementing best management practices to lessen adverse effects of road maintenance on water quality in accordance with the terms of their National Pollutant Discharge Elimination System storm water permits. Maintenance plans prepared for these areas pursuant to Limit 10 are not likely to contain many best management practices that are not already being implemented. Thus, the beneficial effects under the Proposed Action on water quality in urban areas with a population of 100,000 or more are likely to be minor, which is the same effect expected under the No Action Alternative.

As under the No Action Alternative, National Pollution Discharge Elimination System storm water permits are not required in rural areas or urban areas with a population of less than 100,000 (subsection 4.8.2, Roadways and Water Quality). Agencies responsible for road maintenance in these areas are not required to implement best management practices designed to lessen the adverse effects of routine road maintenance on water quality, and most do not. A few agencies, notably the California Department of Transportation, have implemented best management practices outside large urban areas on a voluntary basis. The California Department of Transportation decided to implement the same or similar best management practices on all its roads and highways in urban and rural areas (subsection 4.8.2, Roadways and Water Quality).

In rural areas or urban areas with a population of less than 100,000, the Proposed Action would encourage agencies responsible for RRM to develop and implement plans designed to lessen the adverse effects of routine road maintenance activities on water quality where none exist today. Implementation of best management practices in these areas would likely reduce the runoff of pollutants during road maintenance activities and thus, improve water quality relative to the current condition, which would prevail under Alternative 1. ESUs in California would experience less of an improved benefit due to current best management practices, but the benefits would increase for ESUs in Washington, Oregon, and Idaho, if such plans are implemented.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition could include best management practices that enhance and protect salmonid habitat and thereby minimize the water quality impacts associated with RRM activities by moderating water temperature, reducing soil erosion and runoff of pollutants associated with roadways, and helping to restore natural flow regimes, for example. These plans would also require adequate staff training, tracking, and reporting to

NMFS to ensure activities are consistent with the conservation of listed salmonids' habitat.

5.2.7.3 Alternative 3 – Take Prohibitions with No Limits

The consequences of Alternative 3 would depend on jurisdictional responses to the 4(d) rule take prohibitions. With the take prohibitions in effect, reducing the potential for take could occur by implementing programs similar to those under the Proposed Action; the effects to water quality would be similar as well. However, the effects to water quality would be similar to the No Action Alternative if no additional water quality control measures were implemented beyond current practices.

5.2.8 Fish and Wildlife

5.2.8.1 Salmonid ESUs (in July 2000 4(d) Rule)

As discussed in subsection 4.9.1.3, Threatened and Endangered Fish Species, the salmonid ESUs are in decline. The decline has been attributed to many different factors, such as harvest, operation of hatcheries, hydropower development, and destruction of habitat (Federal Caucus 2000)(Appendix D). Additionally, municipal and agricultural water withdrawals cause water shortages throughout the West, creating passage barriers, water quality declines, and eliminating habitat. Though less measurable, the effects of introduced aquatic nuisance species, which compete for habitat and prey on salmon, have caused a decline in salmon populations (He and Kitchell 1990). Recent research has shown that ocean conditions play a profound role in survival to spawning age, and contribute substantially to total salmon population numbers (Beamish et al. 2000). However, the relative importance of the injurious activities is not known.

The Proposed Action, which offers the ESA conservation tool of Limit 10 of the 4(d) rule, may affect the potentially injurious human activities leading to habitat degradation. The analyses described below focus on the probable effects of the Proposed Action and its alternatives viewed in isolation from the many other factors that affect the 14 salmonid ESUs. The environmental impacts of Limit 10, together with all other past, present, and reasonably predictable future actions that affect the 14 salmonid ESUs, are described in Section 6.0, Cumulative Impacts.

5.2.8.1.1 Alternative 1 – No Action

Alternative 1 represents a continuation of current trends, although state and local conservation efforts outside of the ESA can address some of the factors for decline for these ESUs. Examples of these efforts include local erosion control ordinances, removal of invasive plants, planting of native species, and riparian vegetation protection ordinances. The decline of the 14 salmonid ESUs would likely continue under Alternative 1, because of a multitude of factors described in

Appendix D, Factors for Decline. Thus any adverse effects of road maintenance activities on listed ESUs, if they exist, would likely continue unless there are section 7 modification affecting the ESU, or laws aimed at fish and wildlife protection and conservation.

5.2.8.1.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Under the Proposed Action, routine road maintenance management plans developed to meet Limit 10 criteria would contain provisions and measures designed to protect and conserve the14 salmonid ESUs.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include dust abatement, winter sanding, maintaining stormwater systems, erosion control measures, mechanical vegetation management, and accident clean up measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide. Furthermore, NMFS would not provide ESA liability protections for use of pesticides or herbicides, even if in accord with the ODOT guidance.

The NMFS-approved RRM programs meeting (10)(i) would include methods used to maintain roadways that would benefit salmon. These new methods or best management practices would likely be tailored to regional conditions and the salmon species' unique habitat and life history requirements. Examples of best management practices that support the conservation of listed ESUs include the use of mechanical treatments in place of chemical treatments along roadsides, more efficient ditch maintenance, and protection of riparian habitat. Although implementation of the plans alone is not likely to lead to recovery of the 14 salmonid ESUs, it would contribute to improved habitat conditions, which would provide a foundation for salmonid recovery.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect salmonid habitat and thereby minimize the impacts on the listed ESUs associated with RRM activities by moderating water temperature, emphasizing mechanical maintenance treatments in place of chemical treatments, reducing soil erosion and runoff of pollutants associated with roadways, and restoring natural flow regimes, for example. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure

activities are consistent with the conservation of listed salmonid habitat.

The activities under the Proposed Action would have no negative impacts, compared to Alternative 1, on the 14 salmonid ESUs and could improve habitat, which could support increased populations of these and other listed fish. Additionally, routine road maintenance programs would continue to comply with the Clean Water Act and various state and local regulations that may require erosion control, removal of non-native plants and replacement with native species, and riparian vegetation protection ordinances. Thus, any possible incremental benefits of the Proposed Action on the 14 salmonid ESUs as compared to Alternative 1 would occur over the long term, showing slow incremental improvements in habitat.

5.2.8.1.3 Alternative 3 – Take Prohibitions with No Limits

Under Alternative 3, take of the 14 salmonid ESUs would be prohibited, but the 4(d) rule voluntary conservation option of Limit 10 would not be available. In the absence of Limit 10 and the associated criteria provided by NMFS, those who maintain roadways would be required to conduct activities in compliance with the ESA section 7 consultations or section 10 permit applications.

This alternative would have no adverse effect on the 14 salmonid ESUs compared to the No Action Alternative. With the take prohibitions in effect, reducing the potential for take could occur by implementing a program similar to those under the Proposed Action; the effects on the threatened ESUs would be similar as well. Like the Proposed Action, Alternative 3 would have no long term adverse effects on the 14 salmonid ESUs, but its benefits may be somewhat less than those under the Proposed Action. NMFS would have less flexibility for management of RRM programs without the Limit 10 criteria available under the Proposed Action and thereby fewer ESA options to conserve listed ESUs. Plans developed under Alternative 3 are more likely to benefit threatened fish species as compared to the No Action Alternative where no plans would likely be implemented.

5.2.8.2 Fish (Not Including the 14 Salmonid ESUs)

5.2.8.2.1 Alternative 1 – No Action

Under the No Action Alternative, trends in the status of fish health, abundance, and habitat conditions in the analysis area at both the watershed and reach scales would continue, although state and local conservation efforts outside of the ESA could affect these trends. With no take prohibitions in effect, it is assumed that routine road maintenance carried out by states, local municipalities, and jurisdictions would continue with existing practices. Federal agencies, and those entities that accept federal funds or apply for a federal permit, would continue to consult with NMFS before taking any action that may affect the 14 salmonid ESUs as required under

section 7 of the ESA. However, it is anticipated that the majority of road maintenance actions would not fall under the purview of section 7. Therefore, implementation of this alternative may result in a continued negative impact on fish from routine road maintenance. However, continued gradual improvements to fish and their habitats may be evident as a result of other section 7 consultations affecting the ESUs, other Federal, state, and local regulations and practices aimed at fish habitat protection or conservation.

5.2.8.2.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Under the Proposed Action, habitat conditions affected by RRM plans would improve as compared to conditions under the No Action Alternative particularly when current laws require best management practices. The implementation of routine road maintenance best management practices under the Proposed Action, in addition to other state and local best management practices, such as fish passage requirements, would incrementally benefit native fish. As habitat and water quality continue to improve, native fish may displace invasive warm-water fish species. Non-native cold-water species would benefit from habitat and water quality improvements, but would continue to be managed by local departments of fish and wildlife. Overall, fish species could benefit from activities under the Proposed Action as compared to Alternative 1.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include dust abatement, winter sanding, maintaining stormwater systems, erosion control measures, mechanical vegetation management, and accident clean up measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide. Furthermore, NMFS would not provide ESA liability protections for use of pesticides or herbicides, even if in accord with the ODOT guidance.

The NMFS-approved RRM programs meeting (10)(i) would include methods used to maintain roadways that would benefit fish. These new methods or best management practices could likely be tailored to regional conditions and the salmon species' unique habitat and life history requirements, thus benefitting other fish species. Examples of best management practices that support the conservation of fish include the use of mechanical treatments in place of chemical treatments along roadsides, more efficient ditch maintenance, and protection of riparian habitat. As habitat and water quality continue to improve, native fish may displace invasive warm-water fish species. Non-native cold-water species would benefit from habitat and water quality improvements, but would continue to be managed by local departments of fish and wildlife.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect salmonid habitat and thereby minimize the impacts on the listed ESUs associated with RRM activities by moderating water temperature, emphasizing on mechanical maintenance treatments in place of chemical treatments, reducing soil erosion and runoff of pollutants associated with roadways, and restoring natural flow regimes, for example. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

5.2.8.2.3 Alternative 3 – Take Prohibitions with No Limits

This alternative would have no negative effect on non-listed fish in the analysis area compared to the No Action Alternative. With the take prohibitions in effect, comprehensive programs similar to those under the Proposed Action may be implemented, which could result in improved habitat conditions; the effects to fish would be similar as well. Overall, activities conducted under the Proposed Action and Alternative 3 are more likely to have some positive impacts on fish species as compared the No Action Alternative where no protection measures would likely be implemented.

5.2.8.3 Threatened and Endangered Fish Species

The most prominent of the threatened and endangered fish species are the salmon and steelhead within the 14 ESUs. Many other fish species are listed under the ESA and state sensitive species programs, including species under the jurisdiction of the U.S. Fish and Wildlife Service and state departments of fish and wildlife. These species represent a wide range of taxa, from the widespread coastal cutthroat and bull trout, to endemic species occupying highly unique habitats (subsection 4.9.1.3, Threatened and Endangered Fish Species).

5.2.8.3.1 Alternative 1 – No Action

Under the No Action Alternative, trends in the status of listed fish health, abundance, and habitat conditions in the analysis area at both the watershed and reach scales would continue, although state and local conservation efforts outside of the ESA could address some of the factors for decline affecting these trends. With no take prohibitions in effect, it is assumed that routine road maintenance carried out by states, local municipalities, and jurisdictions would continue with

existing practices. Federal agencies, and those entities that accept federal funds or apply for a federal permit, would continue to consult with NMFS before taking any action that may affect the listed species as required under section 7 of the ESA. Consequently, implementation of this alternative may result in a continued negative impact on listed species from routine road maintenance. However, there could be continued gradual improvements to listed species and their habitats as a result of other section 7 consultations affecting the ESU, or state and local regulations and practices that require best management practices to improve habitat conditions. Programs currently implemented to protect listed species would continue to provide a slight benefit to special status cold-water species such as coastal cutthroat, and ancillary benefits to listed warm-water or unique species, and the unique fish complexes of the Pit and Klamath basins in Oregon and California (subsection 4.9.1, Fish) because of improved habitat conditions.

5.2.8.3.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

The Proposed Action would result in improved habitat conditions for listed fish species, particularly salmonids and other cold-water species. Warm-water listed species could also benefit somewhat from the implementation of comprehensive routine road maintenance programs, as well as from other state and local programs that protect habitat and water quality. By definition, the 14 listed ESUs are imperiled due to poor habitat conditions, population fragmentation, or other factors. Programs currently implemented to protect the 14 listed ESUs would continue to provide benefits, which when combined with routine road maintenance programs under this alternative would provide greater benefits to special status cold-water species than conditions under Alternative 1. For example, protections to riparian habitat and erosion control would benefit both warm and cold-water listed species. Overall, listed fish species could benefit from activities under the Proposed Action as compared to Alternative 1 where no protection measures are likely to be implemented.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include specific erosion control measures, mechanical vegetation management, and accident clean up measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide.

The NMFS approved RRM programs meeting (10)(i) are likely to include methods used to maintain roadways that would benefit fish health and habitat conditions. Examples of best management practices that support fish health and habitat include the use of mechanical treatments in place of chemical treatments along roadsides, more efficient ditch maintenance, and protection of riparian habitat.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect fish habitat and thereby minimize the impacts on fish health associated with RRM activities by moderating water temperature, emphasizing mechanical maintenance treatments in place of chemical treatments, reducing soil erosion and runoff of pollutants associated with roadways, and restoring natural flow regimes, for example. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

5.2.8.3.3 Alternative 3 – Take Prohibitions with No Limits

This alternative would have no adverse effect on listed fish in the analysis area compared to the No Action Alternative. With the take prohibition in effect, reducing the potential for take could occur by implementing a comprehensive routine road maintenance program similar to those under the Proposed Action; the effects to listed fish would be similar as well. However, the effects to listed fish at the reach scale would be similar to the No Action Alternative if no additional routine road maintenance practices were implemented beyond current programs.

5.2.8.4 Birds, Land Mammals, and Herpetofauna

Some of the wildlife species found in the analysis area have a greater potential than others to be affected by RRM activities. In general, these species are amphibians and turtles, roadside foragers (including some birds), and various small animals and birds that prefer edge habitats. These species may be affected by ditch cleaning operations, chemical applications, or any activity with the potential to disturb behavior patterns such as foraging and sheltering. However, because RRM activities vary greatly and are distributed evenly across the analysis area, it is difficult to gauge the degree of effects, except on a case-by-case basis. Furthermore, it is difficult to determine which species could be affected by RRM activities, and how the effects may occur. Therefore, the following analyses address effects by groups of species rather than effects on individual species.

5.2.8.4.1 Alternative 1 – No Action

This alternative would have no additional adverse effects and some potential beneficial effects on birds, land mammals, and herpetofauna at the watershed scale than currently exist. With no

take prohibitions in effect, it is assumed that routine road maintenance would continue with existing practices with a minimum level of habitat protection and erosion control. Consequently, at the reach scale within a watershed, implementation of this alternative could result in the same impacts on some herpetofauna due to habitat loss and fragmentation, and water quantity impacts and water quality degradation, contributing to a decline of amphibians associated with roadside habitats. Routine road maintenance programs, however, would continue to comply with the Clean Water Act, various state regulations that require implementation of water quality and habitat protection measures, or be modified through a section 7 consultation. Therefore, these measures may provide some beneficial effects.

5.2.8.4.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

This alternative would have no adverse effect and some beneficial effects on birds, land mammals, and herpetofauna compared to the No Action Alternative. At the reach scale within a watershed, improvement of habitat conditions associated with approved Limit 10 RRM plans may be realized for some herpetofauna, some small mammals, and neo-tropical birds.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include specific habitat protection measures, mechanical vegetation management, and accident clean up measures (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide. The Proposed Action may include the use of mechanical maintenance treatments in place of chemical treatments along roadsides that could benefit some herpetofauna associated with roadside habitats and could improve the prey base for birds and mammals.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect wildlife habitat and thereby minimize the impacts on wildlife associated with RRM activities by emphasizing mechanical maintenance treatments in place of chemical treatments, reducing runoff of pollutants associated with roadways, and restoring natural flow regimes, for example. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

Overall, birds, land mammals, and herpetofauna may benefit from implementation of the Proposed Action as compared to Alternative 1.

5.2.8.4.3 Alternative 3 – Take Prohibitions with No Limits

This alternative would have no adverse effect on birds, land mammals, and herpetofauna compared to the No Action Alternative at the watershed scale. With the take prohibition in effect, reducing the potential for take at the reach scale could occur by implementing programs similar to those under the Proposed Action; the effects to these species would be similar as well. However, the effects to wildlife at the reach scale could be similar to the No Action Alternative if the response of jurisdictions is to not implement any additional routine road maintenance measures beyond current practices.

5.2.8.5 Threatened and Endangered Wildlife Species

5.2.8.5.1 Alternative 1 – No Action

This alternative would offer no protection to listed species beyond those protections already being implemented by state and local jurisdictions in response to existing rules and regulations, or through other section 7 consultations affecting the ESUs. Ongoing road maintenance has the potential to negatively affect species associated with vegetated edge habitats, such as Nelson's checkermallow, Kincaid's lupine, Fender's blue butterfly, willow flycatcher, and Canada lynx because routine road maintenance practices can disturb the habitats upon which these species depend. However, state and local regulations, if they exist, could provide benefit from protections of riparian and aquatic habitats.

5.2.8.5.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

This alternative would have no adverse effect on listed species compared to the No Action Alternative at the watershed scale. At the reach scale within a watershed, improvement of habitat conditions may be realized for some herpetofauna and neo-tropical birds because of best management practices.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include specific vegetation protection measures and mechanical vegetation management (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those

provided by the ODOT Guide.

Compared to the No Action Alternative, the Proposed Action may include the use of mechanical maintenance treatments, in place of chemical treatments, along roadsides that could benefit some plants and animals associated with roadside habitats, such as ground-dwelling amphibians, and could improve the prey base for some birds and mammals. Activities that reduce the use of chemicals and result in more efficient ditch maintenance and more intact riparian corridors could benefit listed species indirectly.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect threatened and endangered species habitat and thereby minimize the impacts on the listed species associated with RRM activities by moderating water temperature, emphasizing mechanical maintenance treatments in place of chemical treatments, and protecting riparian vegetation, for example. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure it is consistent with the conservation of listed salmonid habitat.

5.2.8.5.3 Alternative 3 – Take Prohibitions with No Limits

This alternative would have no adverse effect and some potential beneficial effects on listed species compared to the No Action Alternative at the watershed scale. With the take prohibitions in effect, reducing the potential for take at the reach scale could occur by implementing comprehensive programs similar to those under the Proposed Action; the effects to listed species would be similar as well. However, the effects to species could be similar to the No Action alternative if no additional species protection measures were implemented beyond current practices.

5.2.9 Vegetation

5.2.9.1 Alternative 1 – No Action

This alternative would have no additional effects on vegetation at the watershed scale than currently exists if current land use practices continue. At the reach scale within a watershed, incremental improvement is possible due to implementation of riparian management best management practices in urban areas with populations of 100,000 or more (subsection 4.8.2,

Roadways and Water Quality) or where other planning efforts require protections of riparian, wetland, and other vegetation. Alternative 1 would have no adverse or beneficial effect on vegetation at a watershed scale because it does not include any change in existing practices.

5.2.9.2 Alternative 2 – Take Prohibitions with Limits (Proposed Action)

Under the Proposed Action, there would be improvement to vegetation conditions compared to the No Action Alternative.

ODOT Transportation-Equivalent or Better RRM Plans (10)(i)

Under the Proposed Action, all NMFS approved ODOT equivalent or better plans would be required to meet or exceed the best management practices established by ODOT, which include specific vegetation protection measures and mechanical vegetation management (subsection 3.4, Alternative 2 - Proposed Action). These plans would also require adequate staff training, tracking, and reporting to NMFS that results in protections equivalent to or better than those provided by the ODOT Guide.

Under the best management practices in a routine road maintenance plan, or activities conducted under them, vegetation would be managed to minimize impacts to threatened salmonids and invasive non-native plant species would be replaced with native species. Conditions may also improve for riparian vegetation because of less removal of riparian vegetation, more replanting with native species, and therefore less sediment moving through riparian habitat, unless these practices are already required through existing laws and regulations.

RRM Plans Meeting Properly Functioning Conditions (10)(ii)

Under the (10)(ii) criteria in the Proposed Action, RRM programs must be consistent with the conservation of listed salmonid' habitat when it contributes, as does the ODOT Guide, to the attainment and maintenance of properly functioning habitat condition (subsection 3.4, Alternative 2 - Proposed Action). RRM programs that contribute to the attainment and maintenance of properly functioning habitat condition would include best management practices that enhance and protect habitat associated with RRM activities by emphasizing mechanical maintenance treatments in place of chemical treatments and protecting riparian vegetation. These plans would also require adequate staff training, tracking, and reporting to NMFS to ensure activities are consistent with the conservation of listed salmonid habitat.

5.2.9.3 Alternative 3 – Take Prohibitions with No Limits

Impacts resulting from Alternative 3 would depend on jurisdictional responses to the 4(d) rule take prohibitions. With the take prohibition in effect, reducing the potential for take could occur

by implementing programs similar to those under the Proposed Action; the effects on vegetation would be similar as well. However, the effects on vegetation would be similar to the No Action Alternative if no additional vegetation management measures were implemented beyond current practices.

5.2.10 Demographic Trends – All Alternatives

No alternative under consideration would have an effect on demographic trends. Population trends in particular communities are the result of multiple of factors but would not result from RRM plan implementation actions. Current demographic trends, including the loss of population in some rural areas, would continue under all alternatives.

5.2.11 Economy – All Alternatives

Activities under Alternatives 1, 2, and 3 would not have an effect on the economy on a statewide or region-wide scale in the analysis area. Under the Proposed Action, there may be some additional cost incurred by local jurisdictions that is not quantifiable.

5.2.12 Tourism and Recreation – All Alternatives

No alternative under consideration would have an impact on tourism or recreation because no RRM plan would alter tourism or recreation at any scale within the analysis area.

5.2.13 Cultural Resources – All Alternatives

Alternatives 1, 2, and 3 would have no measurable effect on cultural resources because none of the alternatives involve ground disturbance or construction. While there may be a building or staging area associated with routine road maintenance, it would normally remain within the road right-of-way.

5.2.14 Federal Treaty and Trust Responsibilities; Tribal Rights and Interests– All Alternatives

No alternative under consideration would have an impact on Federal Treaty and Trust Responsibilities, Tribal Rights and Interests because none of the activities under the alternatives would alter them at any scale within the analysis area. The RRM plans would have no impact on elements of Federal Tribal Treaty and Trust Responsibilities, or Tribal Rights and Interests.

5.2.15 Environmental Justice – All Alternatives

No alternative under consideration would have an impact on Environmental Justice described in subsection 4.16, Environmental Justice.